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(12) UK Patent Application (19) GB (11) 2 049 909 A

(21) Application No 7915188
(22) Date of filing 1 May 1979
(43) Application published
31 Dec 1980
(51) INT CL³
F28F 3/10
(52) Domestic classification
F4S 4G 4J1A 4U29
(56) Documents cited
GB 1458929
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GB 1101988
GB 1024977
GB 967640
GB 662359
(58) Field of search
F4S
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(54) Gaskets for heat exchanger devices

(57) The invention relates to gaskets for heat exchanger devices. Gaskets of similar shape may often be used in heat-exchanger devices which have different operating pressures. It is important that the correct gasket is used. Lugs or upstanding protuberances, which do not contribute significantly to the sealing properties of the gasket, are provided on the gasket so as to identify the gasket. In the following example, castellations 16 formed in the outside walls 18 of the gasket grooves provide support for the gaskets as is known in the art. On a high pressure gasket 30, upstanding protuberances 17 on the gasket 30 cooperate with the gaps formed at the edge of the plates 15 by the castellations 16, this giving a clear indication that the gasket 30 is a high pressure gasket.

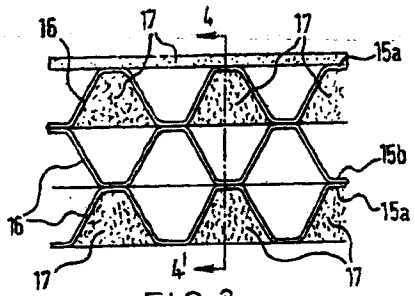

FIG.3.

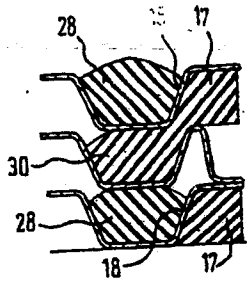

FIG.4.

GB 2 049 909 A

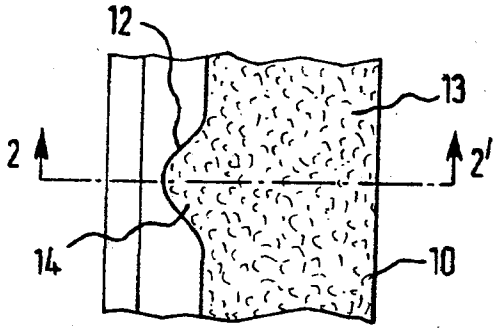

FIG.1.

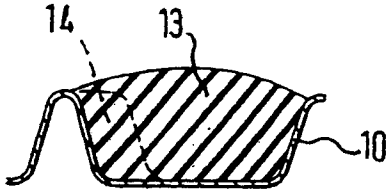

FIG.2.

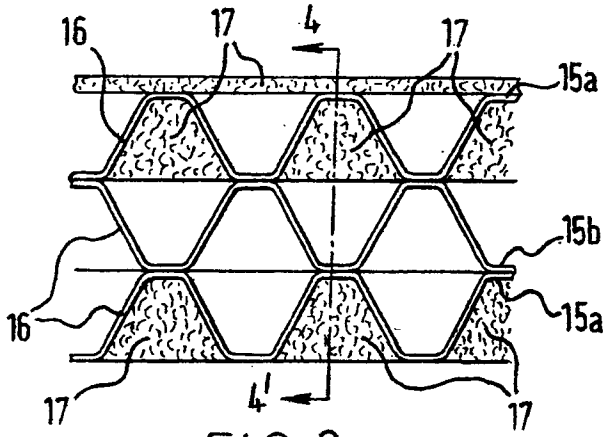

FIG.3.

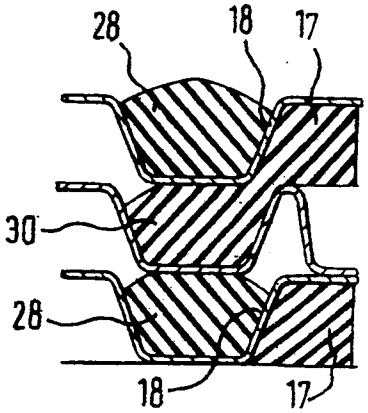

FIG.4.

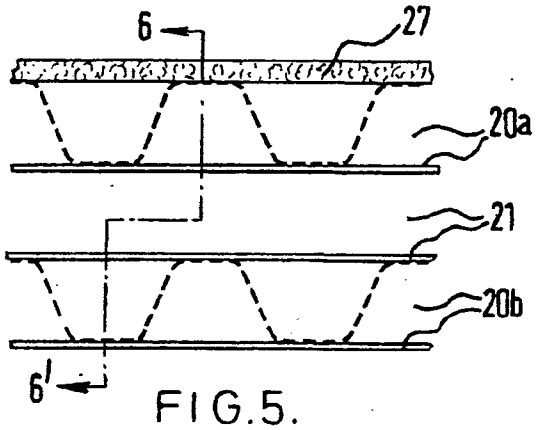

FIG.5.

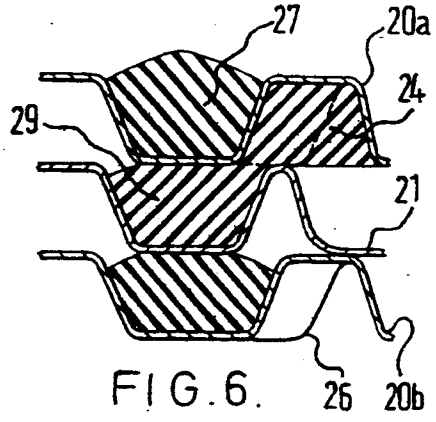

FIG.6.

SPECIFICATION

Gaskets for heat exchanger devices

The present invention relates to gaskets and has particular application in gaskets for heat exchanger devices. Many present day heat exchanger devices consist in a stack of plates with a gasket between each pair of plates; the stack is compressed in order to form a fluid tight seal between the plates

Substantially similar plates may be used over a large range of fluid operating pressures. It is often the case that the only difference between various heat exchanger plates is the gauge of the material from which the plates are made. It has been found necessary to vary the type of gasket used according to the operating pressure, for example a thicker gasket may be used for plates having a higher operating pressure.

When a thicker, high pressure gasket is used to form a seal between low pressure plates the compression of the gasket when the stack is compressed may result in distortion of the groove in the plate in which the gasket is seated. When a low pressure gasket is used between high pressure plates there may be a blowby of fluid, often necessitating expensive cleaning and recommissioning procedures. It is necessary therefore to use easily distinguishable gaskets.

A system of colour coding of the gaskets is at present used to identify difference rubber compounds from which gaskets are formed and extension of this system to indicate pressure rating is not desirable.

Accordingly, the present invention consists in a gasket for use in heat exchanger devices which has a region or regions which can be used to identify the gasket and which do not contribute significantly to the sealing properties of the gasket.

A more particular form of the present invention consists in a gasket for heat exchanger devices having laterally extending lugs and/or upstanding protuberances which can be used to identify the gasket and which do not contribute significantly to the sealing properties of the gasket.

Particular examples of preferred embodiments of the present invention will now be described with reference to known forms of gasket groove shown in the accompanying drawings, in which an area of a plate or adjacent plates in a plate heat exchanger are shown and in which:

Figure 1 is a plan view of a particular form of a high pressure gasket groove with a gasket therein;

Figure 2 is a section along the line 2—2′ of Figure 1;

Figure 3 is a side elevation of three plates which are provided with castellations at their outer edge, in order to provide support for the outer edge of the gasket;

Figure 4 is a section along the line 4—4′ of Figure 3;

Figure 5 is a side elevation of three heat exchanger plates taken from a stack of plates in which the alternate plates have scallops which cooperate with folds on the adjacent plates to provide support for the outer edges of the gaskets;

Figure 6 is a section along the line 6—6′ of Figure 5;

One application of the present invention to a known form of the gasket groove is shown in Figures 1 and 2. Figure 1 is a plan view of a length of a high pressure gasket groove 10 having a recess 12 in one side of the groove. The gasket 13 has a lug 14 which fits into the recess 12. The recesses 12 will preferably be repeated at frequency intervals along the groove. The equivalent low pressure plate will have a substantially parallel sided gasket groove, hence the corresponding gasket will not have the lug or lugs 14. It can be seen that there should be no confusion between high pressure and low pressure gaskets and it is not possible to fit the high pressure gasket into the low pressure groove.

An application of the present invention to a known form of gasket groove is shown in Figures 3 and 4. Figure 3 shows a side elevation of three plates 15 with staggered castellations 16 which provide support for the outside edges 18 of the gaskets 28, the castellations of the plate 15*b* being offset from those of the plates 15*a*. This is a method of gasket support commonly known in the art. Referring now to Figure 4, it can be seen that on the high pressure gasket 30 additional upstanding protuberances 17 are provided at regions along the gasket so as to cooperate with the gaps which are formed between the castellations 16 of the separate plates 15, and that these protuberances will give a clear and visible indication that the gasket is of the high pressure type. Gaskets 28 are similar low pressure gaskets which do not have the upstanding protuberances 17.

An application of the present invention to a known form of gasket groove having recesses similar to that shown in Figures 1 and 2 is shown in Figures 5 and 6. In Figure 5, it can be seen that scallops or projections 26 are pressed in the outside wall of the gasket groove in the plate 20a and 20b (as is best seen in Figure 6) and are in contact with the double fold in the plate 21 according to a well known method of gasket support, these projections being common to both the high and low pressure models of plate 20. Plate 21 has a high pressure gasket seated in its gasket groove. An upstanding protuberance 24 projects into the reverse side of the adjacent plate 20a, occupying a space formed between the edges of the two plates. Hence it can be seen that the provision of upstanding protuberances on the high pressure gasket readily distingulshes it from the low pressure type and utilises an available feature of known types of plate.

Gasket grooves may of course be designed with such identification methods in mind.

Also the upstanding protuberances may be features of the low pressure gaskets.

It is to be understood that the details of the invention may be varied within the scope of the

accompanying claims.

CLAIMS

1. A gasket, for use in heat exchanger devices, which has a region or regions which can be used to identify the gasket and which do not contribute significantly to the sealing properties of the gasket.

2. A gasket as claimed in claim 1, in which the region or regions are laterally extending lugs.

3. A gasket as claimed in claim 2, in which the region or regions are upstanding protuberances.

4. A gasket as claimed in claim 1, 2 or 3 in which the gasket is of elastomeric material.

5. A gasket having a feature or features substantially as hereinbefore described with reference to Figures 1 and 2, or 3 and 4, or 5 and 6.

6. A plate for a heat exchanger device in which a gasket in any of claims 1 to 5 is substantially seated in a groove at the periphery of the plate.

7. A stack of two or more plates for a heat exchanger device having on or more gaskets as claimed in any of claims 1 to 5 and in which the region or regions cooperate with one or more castellations, scallops or other similar features of one or more of the plates.

8. A stack of plates for heat exchanger devices in which a gasket or gaskets as claimed in any of claims 1 to 5 are used to form a fluid tight seal between the plates.

Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1980. Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.